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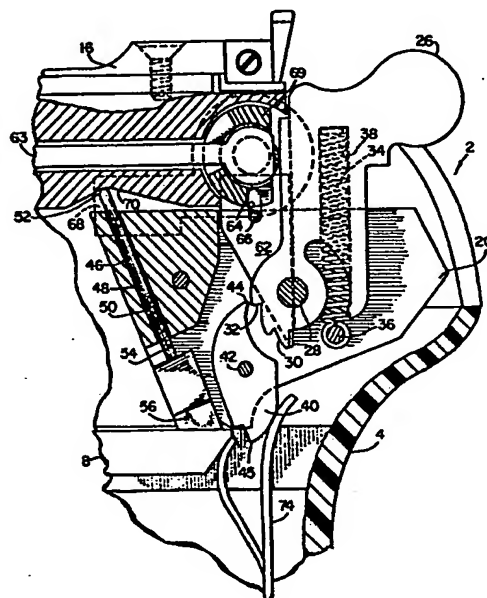
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A modular hammer and safety assembly for a firearm.

A modular hammer and safety assembly (2), for a firearm, said assembly comprising a slide structure for connection to a firearm slide receiver assembly (16), an ejector mechanism, a hammer (26), a spring (34), biasing the hammer, a sear (40) for retaining the hammer in a cocked position, a disconnecter assembly (46) operable to prevent actuation of the sear (40) during a cocking operation, and a safety device (62) selectively moveable to a position preventing firing of the firearm, the housing and the aforementioned components being interconnected such that the assembly may be withdrawn, or inserted into, a firearm as a unitary modular unit.



EP 0 143 114 A1

A MODULAR HAMMER AND SAFETY ASSEMBLY FOR A FIREARMBackground of the InventionField of the Invention

The invention relates to firearms and is directed more particularly to a modular hammer and safety assembly for a firearm.

Description of the Prior Art

In breaking down semi-automatic pistols of the type disclosed in U.S. Patent No. 1,070,582, issued August 19, 1913 to J. M. Browning, and generally referred to as the conventional Colt Government Model .45, an operator is faced with a multitude of individual components, all of which must be carefully kept track of and carefully returned to their rightful positions in the handgun.

In an attempt to adapt handguns to accepting more than a single caliber of cartridge, interchangeable components have been introduced. In U.S. Patent No. 2,090,657, for example, issued August 24, 1937 to D. M. Williams, there is shown and described a modified pistol of the '582 type having a subcaliber barrel and slide which may be substituted for the standard parts to enable subcaliber ammunition to be used.

In an attempt to make conversions as convenient as possible, there have been provided various components in modular form, such as complete barrel assemblies, slide-receiver assemblies, frame and trigger assemblies, and the like, affording quick and easy interchangeability of packages of components.

In some instances of conversion, it is necessary to adapt the hammer assembly and/or safety assembly to the "new" slide assembly. By and large, such components constitute a multiplicity of parts, mostly small in size, easily lost, and certainly not quick and easy to disassemble and reassemble.

There is a need for a modular assembly of hammer and safety components adapted to be handled by an operator as a single unit.

Summary of the Invention

An object of the invention is to provide a modular hammer and safety assembly for a firearm, the components of which are so interconnected that the assembly may be withdrawn, or
5 inserted into, a firearm as a unitary modular unit.

With the above and other objects in view, as will hereinafter appear, a feature of the present invention is the provision of a modular hammer and safety assembly for a firearm, the assembly comprising a housing, a first component comprising a slide means
10 extending from the housing for interconnection with a slide receiver assembly, a second component comprising an ejector means fixed to the housing, a third component comprising a hammer pivotally mounted in the housing, a fourth component comprising spring means disposed in the housing and biasing the hammer
15 toward a firing position, a fifth component comprising a sear pivotally mounted in said housing and adapted to engage the hammer and retain the hammer in a cocked position against the spring bias, a sixth component comprising a disconnecter means slidably mounted in the housing and operable to prevent actuation of the
20 sear during a cocking operation, and a seventh component comprising a safety means mounted in the housing and selectively moveable between a first inactive position to a second position in which the safety means prevents firing of the firearm, the housing and the components being interconnected such that the assembly may be
25 withdrawn, or inserted into, a firearm as a unitary modular unit.

The above and other features of the invention, including various novel details of construction and combinations of parts, will now be more particularly described with reference to the accompanying drawings and pointed out in the claims. It will be
30 understood that the particular device embodying the invention is shown by way of illustration only and not as a limitation of the invention. The principles and features of this invention may be employed in various and numerous embodiments without departing from the scope of the invention.

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Brief Description of the Drawings

Fig. 1 is a side elevational view of a portion of a firearm with parts broken away to show a modular hammer and safety assembly, illustrative of an embodiment of the invention, in place in the firearm, parts of the assembly being shown in section to more clearly show the various components thereof, the assembly being shown in "at rest" position without the safety engaged;

Fig. 2 is an enlarged side elevational view of portions of Fig. 1, with additional components shown;

Fig. 3 is a rear elevational view of a portion of the assembly shown in Fig. 2;

Fig. 4 is similar to Fig. 1, but shows the assembly in a cocking position;

Fig. 5 is similar to Fig. 4, but shows the assembly in a cocked position;

Fig. 6 is similar to Figs. 1 and 2, but shows the assembly in a cocked position;

Fig. 7 is an enlarged side elevational view, similar to Fig. 6;

Fig. 8 is a rear elevational view similar to Fig. 3 but shows the assembly in an alternative position;

Fig. 9 is a top plan view of the illustrative hammer and safety assembly;

Fig. 10 is a front elevational view of the hammer and safety assembly;

Fig. 11 is a side elevational view of the hammer and safety assembly; and

Fig. 12 is a side elevational view similar to Figs. 2, 5 and 7, but showing the assembly in a cocking position with the safety

actuated.

Description of the Preferred Embodiment

Referring to the drawings, it will be seen that the illustrative assembly 2 is disposed in a pistol including a frame assembly 4 having as portions thereof a trigger guard 6, a

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trigger mechanism 8, a grip portion 10, and a barrel mounting portion 12. The pistol further includes a barrel assembly 14 connectable to the barrel mounting portion 12 and a slide receiver 16 slidably mounted on the frame assembly.

5 The modular hammer and safety assembly 2 includes a housing 20 having extending therefrom a slide means 22 (Fig. 9) adapted for sliding interconnection with the slide receiver 16. Also extending from the housing 20 is an ejector means 24 (Fig. 9). A hammer 26 is pivotally mounted in the housing 20 by a pin 28
10 disposed centrally of a pawl portion 30 of the hammer 26. The pawl portion 30 is provided with teeth 32 on a portion of its periphery. A spring 34 is mounted on a pin 36 in the housing 20 and extends into a recess 38 in the hammer 26. The spring 34 biases the hammer forwardly, or leftwardly as viewed in Fig. 1.

15 A sear 40 is pivotally mounted in the housing 20 by a pin 42. A first end 44 of the sear 40 is adapted to engage the teeth 32 of the hammer pawl portion 30; a second end 45 of the sear 40 is adapted to be engaged by the trigger mechanism 8. Thus, the sear 40 interconnects the trigger mechanism 8 and the hammer 26.

20 A disconnecter means 46 is disposed in the housing 20 and comprises a pin 48 slidably disposed in a bore 50 in the housing 20. The pin 48, at a first end thereof is engageable with the slide receiver 16, and at a second end 54 thereof carries a pusher member 56 operable to divert movement of the trigger mechanism 8
25 during a cocking operation, as will be further explained below.

 A safety means 60 is mounted in the housing 20 and includes a reciprocally movable plunger 62 engageable with the sear 40 to separate the sear and the hammer pawl portion, releasing the hammer but shielding a firing pin 63, as will be further discussed
30 below. The plunger 62 has a slot 64 therein in which is disposed a pin 66, the slot and pin arrangement permitting movement of the plunger selectively toward and away from the sear 40. An actuating lever 68 (Fig. 5) may be located on the side of the slide assembly 16

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and be operatively connected to the plunger, as by a rotatable cam means 69, to serve as an actuator for the safety plunger.

5 In Figs. 1 and 2, the firearm is shown at rest, with the safety in the inactive, or raised, position. The hammer 26 is in a forward position, biased forwardly by the spring 34. The first end 52 of the disconnecter pin 48 is disposed in a recess 70 in the slide receiver 16.

10 To cock the piece, the slide receiver is moved rearwardly by an operator to the position shown in Fig. 4. Referring particularly to Fig. 4, it will be seen that the rearward movement of the slide receiver 16 has forced the disconnecter pin 48 out of the recess 70 and downwardly, causing the pusher member 56 at the second end 54 of the disconnecter pin 48 to bear against the
15 trigger mechanism 8, pushing the trigger mechanism downwardly and out of alignment with the sear 40. At this point, pressure applied to the trigger by the operator will fail to actuate the hammer. The rearward movement of the slide receiver 16 relative to the hammer and safety assembly 2, has further caused the hammer to
20 pivot upon pin 28, against the bias of the spring 34 to the position shown in Fig. 4. The toothed portion of the pawl portion 30 of the hammer has been engaged by the first end 44 of the sear 40, holding the hammer in a rearward position, as shown. A leaf spring 74 extending from the frame assembly 4 bears against the sear 40
25 and exercises a steadying and holding influence thereon.

When the slide receiver 16 returns to its forwardmost position (Fig. 5), the disconnecter pin 48 is positioned to re-enter the slide recess 70. A trigger spring 72 urges the trigger mechanism 8
30 back to its normal position, which in turn urges the disconnecter pin 48 back into the slide recess 70.

At this point, if it is not desired to fire the piece, the actuator lever 68 may be rotated to move the safety plunger 62 into abutting engagement with the sear 40, separating the sear from

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the pawl portion 30 of the hammer 26, thereby releasing the hammer and permitting the hammer to pivot forwardly under the influence of the spring 34 (Fig. 7). Turning the safety actuating lever 68 serves to rotate the cam means 69, as aforementioned, which serves to move cam stop means 76 into a position protecting the firing pin 63 from contact by the hammer 26 (Fig. 7). Thus, the actuation of the safety causes the hammer to move forwardly, but prevents the hammer from striking the firing pin. To fire the pistol, it is necessary to release the safety and re-cock the pistol.

Upon firing of the pistol, expansion of gases causes rearward movement of the slide receiver 16 to cock the pistol and repeat the above cycle. As the slide receiver proceeds rearwardly the slide receiver and the ejector means 24 cooperate to remove a spent cartridge from the chamber of the gun, in accordance with known methods.

If the safety is "on" and an operator attempts to cock the piece, the engagement of the plunger 62 with the sear 40 prevents retention of the hammer 26 in a rearward cocked position, the hammer merely returning to the forward position, engaging the stop means 76 and prevented thereby from engaging the firing pin 63.

If it is desired to convert the pistol to a different caliber, the required interchange components are removed from the frame assembly and new components are attached thereto. If it is necessary to change hammer assemblies, a "new" assembly, substantially as described above, differing only in proportions, is substituted for the "old" assembly. The entire hammer and safety assembly is removable and insertable as a single unit.

It is to be understood that the present invention is by no means limited to the particular construction herein disclosed and/or shown in the drawings, but also comprises any modifications or equivalents within the scope of the disclosure.

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C L A I M S

1. A modular hammer and safety assembly for a firearm, said assembly comprising a housing, a first component comprising a slide means extending from said housing for interconnection with a slide receiver assembly, a second component comprising an ejector means fixed to said housing, a third component comprising a hammer pivotally mounted in said housing, a fourth component comprising spring means disposed in said housing and biasing said hammer toward a firing position, a fifth component comprising a sear pivotally mounted in said housing and adapted to engage said hammer and retain said hammer in a cocked position against said spring bias, a sixth component comprising a disconnecter means slidably mounted in said housing and operable to prevent actuation of said sear during a cocking operation, and a seventh component comprising a safety means mounted in said housing and selectively moveable between a first inactive position to a second position in which said safety means prevents firing of the firearm, said housing and said components being interconnected such that said assembly may be withdrawn, or inserted into, a firearm as a unitary modular unit.

2. The invention in accordance with claim 1 in which said hammer is mounted upon a first pivot pin fixed to said housing, said spring means is mounted on a first mounting pin fixed to said housing, said sear is mounted upon a second pivot pin fixed to said housing, said disconnecter means comprises a pin disposed in a bore in said housing, said safety means comprises a reciprocally moveable plunger engageable with said sear, said plunger having a slot therein, and a second mounting pin fixed to said housing and disposed in said slot, permitting said reciprocal movement of said plunger on said second mounting pin.

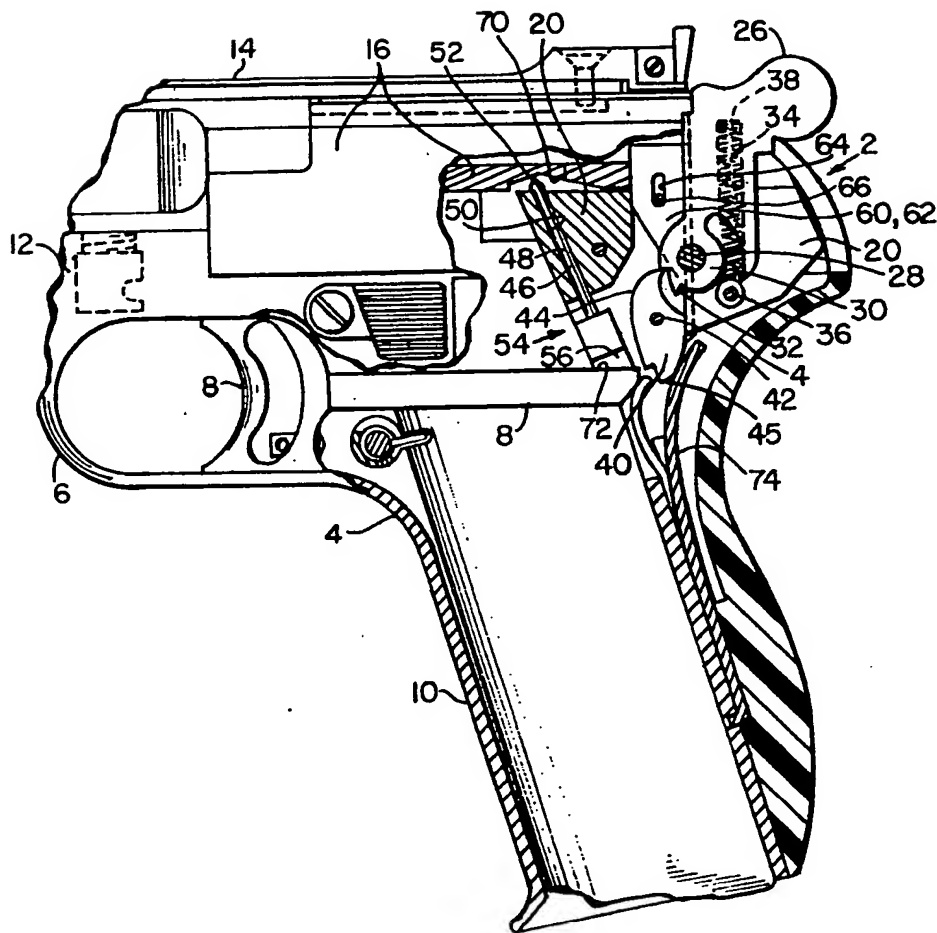


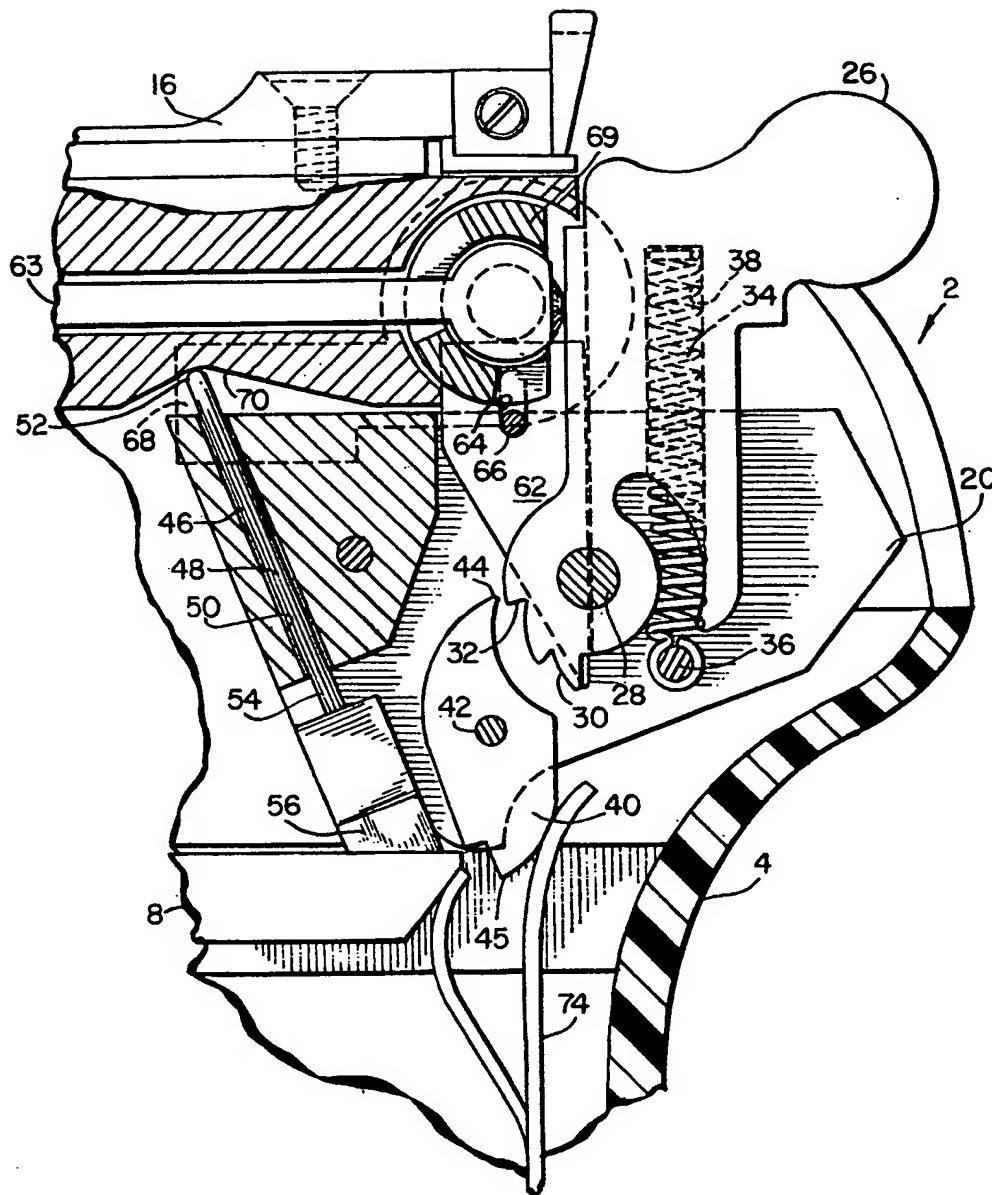
Fig. 2

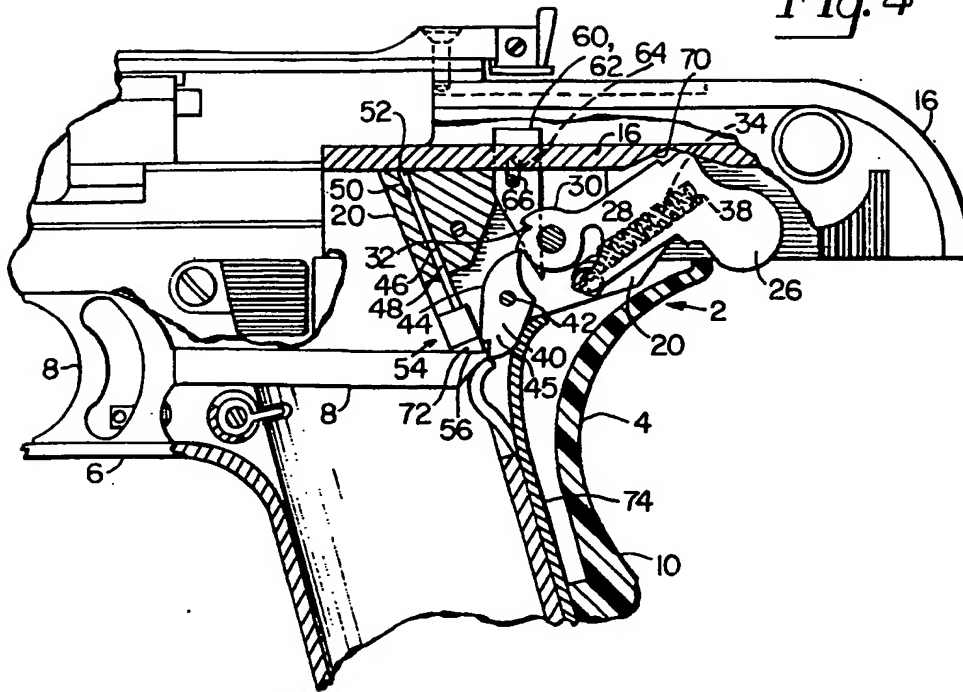
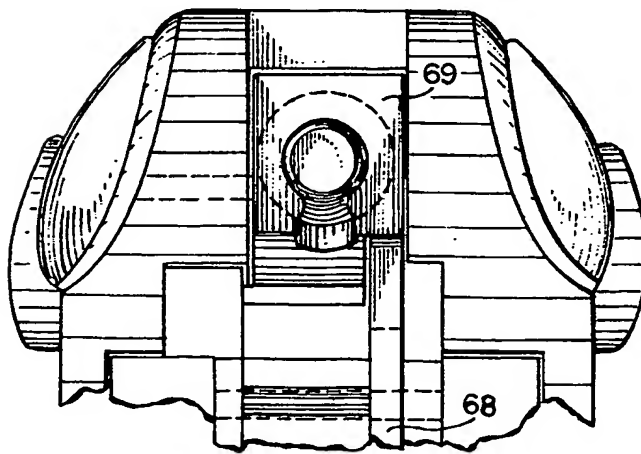
Fig. 4Fig. 3

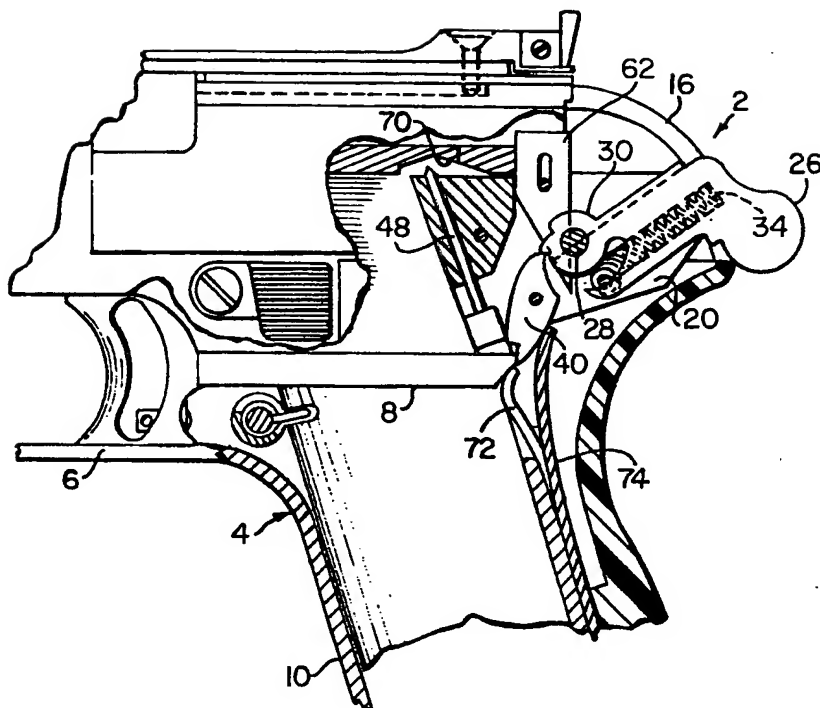
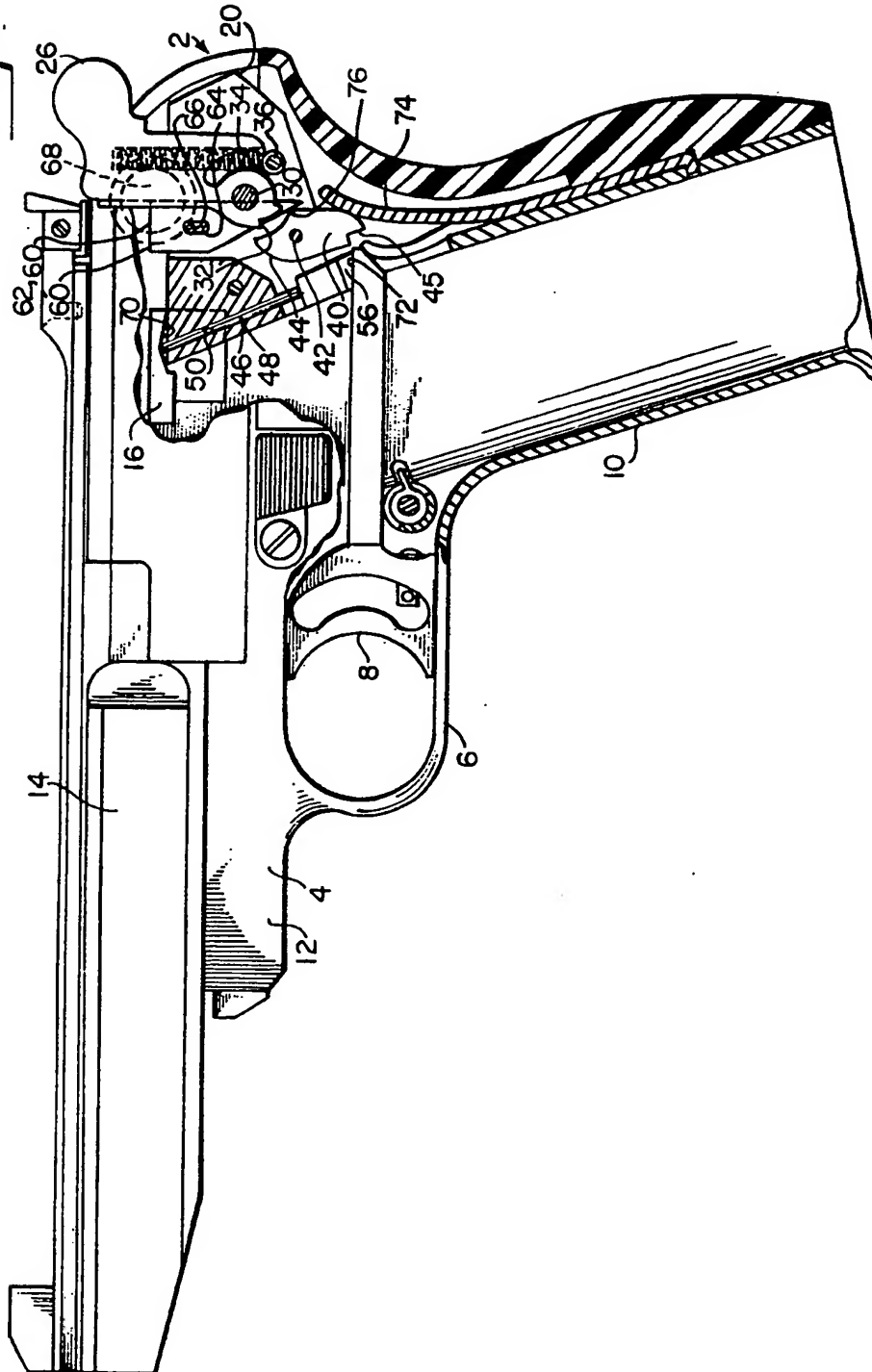
Fig. 5

Fig. 6



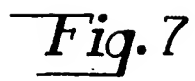


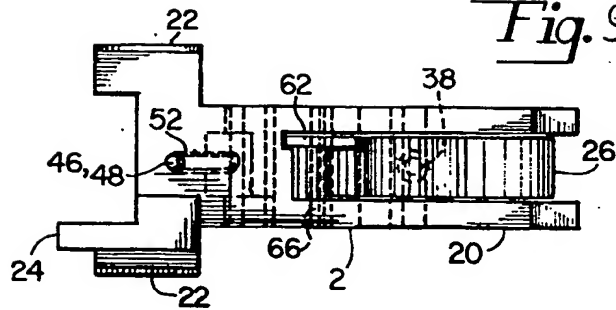
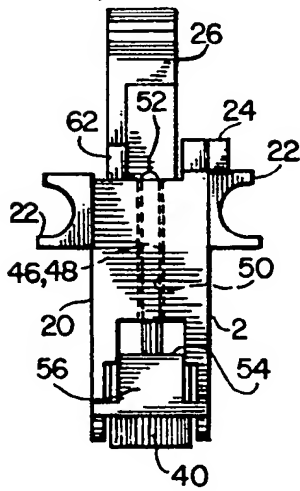
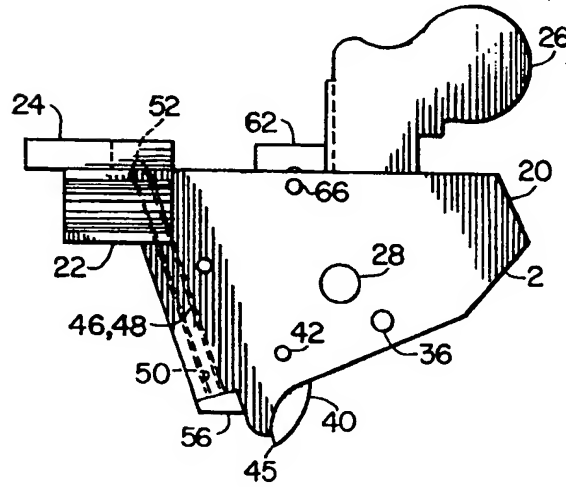
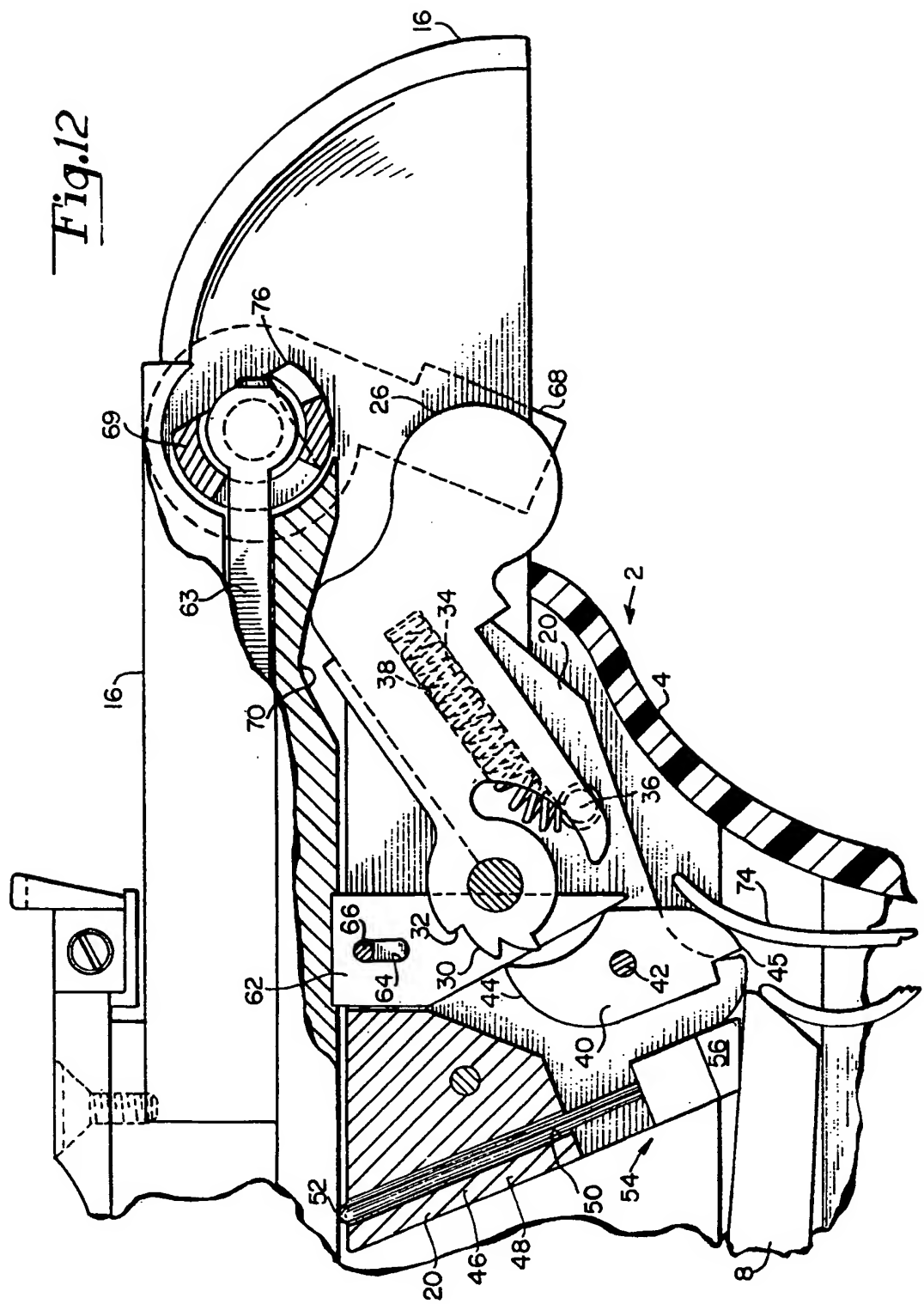
Fig. 9*Fig. 10**Fig. 11*

Fig. 12





European Patent
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EUROPEAN SEARCH REPORT

0143114
Application number

EP 83 11 1882

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. 7)
Y	US-A-3 016 646 (SMITH) *Figures; column 1, lines 39-43; column 2, lines 50-58; column 4, lines 38-75; column 5, lines 1-25; column 5, lines 38-47*	1	F 41 C 19/00 F 41 C 5/00
Y	--- US-A-3 713 241 (DIECKMANN) *Figure 7; column 3, lines 28-37; column 3, lines 48-51; column 13, lines 1-10*	1	
Y	--- DE-C- 90 430 (MAUSER) *Figures 1,3,8-10; page 3, left-hand column, last paragraph; page 3, right-hand column, first paragraph*	1	
A	--- FR-A- 786 652 (FABRIQUE NATIONALE D'ARMES DE GUERRE) *Figures 3,4; page 2, lines 52-64*	2	TECHNICAL FIELDS SEARCHED (Int. Cl. 7) F 41 C
A	--- EP-A-0 057 733 (GABILONDO) *Figures 26-28; page 46, para- graph 2; page 47, paragraph 2*	2	

The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 18-07-1984	Examiner HAMMOND A.D.
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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